



ABSTRACT

Aim: To examine possible associations between migraine and certain visual conditions that are encountered by individuals with migraine.

Study Design: Descriptive cross-sectional.

Duration and Settings of the Study: October 2023 to December 2023 at Mayo Hospital, Lahore.

Methods: The Ethical Review Board of the College of Ophthalmology and Allied Vision Sciences (1474, 23) granted approval to the study. A sample size of 73 people was calculated using a formula giving confidence interval of 95%, an estimated proportion of 25% (0.25), and the desired precision of 10% (0.10). A questionnaire was used for data collection. People with migraine from Lahore over 18 years of age were included in the study, while people with certain neurological conditions having migraines were excluded. Categorical data was cross-tabulated. The data was analyzed using an independent sampling t-test. Ap-value < using SPSS 25.00.

Results: Out of 79 participants, 53 were male and 31 were married. Prevalence of headaches in the population surveyed was 89.9%. Among 79 participants, 44.3% said they had taken medicine to relieve their headaches. Of these, 26.6% of participants reported that taking medication helped to relieve their headaches, 39.2% did not feel better with medicines and 34.2% were unsure. Experience of a temporary blindness in one eye while having a migraine attack was significant ($p < 0.001$). Similarly, seeing a blurring spot in the sides of the visual field and distorted image viewing while having a migraine attack were also significant ($p < 0.001$).

Conclusion: A possible direct relation between migraine and certain visual health-related conditions was proved significant.

Key Words: Migraine, Migraine with Aura, Ophthalmic Migraine, Blindness, Visual field.

INTRODUCTION

Dr. Galezowski first time described migraine as a common disease in 1882.¹ Migraine is a special form of headache that lasts longer than normal headache usually for hours to days. Moreover, it always occur at a specific part of the brain.² It wasn't until 1882 that retinal migraine was formally defined. Since then, different phrases like "ocular migraine" and "ophthalmic migraine" have been used synonymously in the literature. There is a debate and possible misunderstanding for patients and physicians due to

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absence of a uniform and agreed definition.³

Migraine often affects our vision too, causing short termed sudden visual loss (most likely monocular).⁴ We can say that migraine is a chronic disease of unknown etiology that causes a variety of cognitive problems.⁵ Clinical, physiological, and neuroimaging evidence all point towards increased neural hyper excitability as the cause of most migraine-related visual disturbances. We can understand the various complex manifestations of the so-called Alice in Wonderland Syndrome, explains how simple (e.g., patterns, color) visual functions can be affected in migraine patients.

We also stress upon how crucial it is to thoroughly and proactively assess visual function in migraineurs. Migraine with aura,⁶ is an attack of transient neurological symptoms, often characterized by visible

or sometimes dysphasic aura disturbances, prior to the headache.⁷ Symptoms related to the visual system are typical of migraine, a neurovascular disorder of the brain characterized by frequent episodes of severe headache lasting from 4 hours to 3 days.⁸ Almost a third of migraine sufferers experiences visual field issues before the headache, but there are so many other visual symptoms that are associated with migraine.⁹ The purpose of this narrative is to provide a brief overview of these visual symptoms. First, the typical migraine aura is discussed and then the differential diagnosis of atypical aura is made. Next is the examination of visual symptoms other than migraine aura: photophobia, palinopsia.¹⁰ Alice in wonderland syndrome, visual snow, scintillating scotomas, and so many others. Absence of local literature prompted the researchers to conduct this study.

METHODS

This study was approved by the Ethical Review Board of the College of Ophthalmology and Allied Vision Sciences (1474, 23), Mayo Hospital, Lahore. Study duration was October 2023-December 2023 in Lahore. A descriptive cross-sectional study design was used to evaluate the possible relationship between migraine and specific visual health-related conditions. A questionnaire was used to collect data from over 73 people over age of 18 years in Lahore having migraines or typical headaches. The inclusion criteria were people of Lahore having migraine/typical headaches. And people having migraine or typical headaches of an age limit of over 18 years. The following formula was used $n_s = \frac{z^2 \cdot \frac{p(1-p)}{d^2}}$, Where, the $Z_{1-\alpha/2}$ factor determines the confidence interval and it was 95%. The factor “P” gives an estimated proportion which was 25% (0.25). The factor “d” is the desired precision which was equal to 10% (0.10).

Exclusion criteria included patients having any nervous system diseases like multiple sclerosis or intellectual disability and patients having aged less than 18 years. The place of study was the city of

Lahore. After the collection of data, it was analyzed using SPSS version 25. Quantitative variables were measured by taking mean and standard deviation and for qualitative variables frequency and percentages were calculated. For categorical data cross-tabulation was applied. Independent sampling t-test was used to analyze the data. A p-value. The research protocols were approved by the Ethical Review Board of College of Ophthalmology and Allied Vision Sciences.

RESULTS

A total of 79 patients were examined. Out of these 79 patients, 53 were male and 31 were married. An indication of the prevalence of headaches in the population surveyed is the fact that 89.9% of those who took part in the study reported having migraines in the year before the survey. Of those who participated, 44.3% said they had taken medicine to relieve their headaches. Of these, 26.6% of participants reported that taking medication helped to relieve their headaches, compared to 39.2% who disagreed and 34.2% who were unsure. This is a noteworthy finding. In this study, 84.8% of respondents claimed that they had a migraine that lasted longer than four hours. Additionally, a sizable portion (74.7%) claimed that the pain was limited to one side of their head. The study focused on a number of sensory reactions that are frequently linked to migraines, including light sensitivity (40.5%), nausea or vomiting (65.8%), and pounding or vibrating sensations (77.2%). Furthermore, 68.4% of participants stated that noise significantly disturbed them during episodes of headache. It was evident that everyday tasks were affected by migraines, as 46.8% of participants claimed that their ability to move or think was affected. The frequency of headaches varied; 49.4% of participants said they experienced it every month. While 27.8% of participants described a pulsating sensation, 46.8% of participants described a pressured or heavy feeling. 51.9% of those surveyed claimed to occasionally experience severe pain. The prevalence of

visual impairment during migraine attacks was high; 49.4% of participants said they had blurry vision, 48.1% said they had uncomfortable light flashes, and 57.0% said they had floating in their field of vision. The findings provided a thorough understanding of the range of experiences and symptoms related to migraine attacks in the study population.

Table 1. Factors like nausea, noise, numbness, and intellectual and physical abilities

Title questions	Yes Frequen cy (%age)	No Frequen cy (%age)	I don't remem ber/nev er noticed	P- value*
Have you ever experienced nausea or vomiting along with headaches?	52 (65.8)	13 (16.5)	14 (17.7)	≤0.001
Does sound/noise bother you more when you have headache?	54 (68.4)	17 (21.5)	8 (10.1)	≤0.001
Have you ever experienced numbness or tingling sensation in arms, legs, hands or in feet while you have headache?	16 (20.3)	44 (55.7)	19 (24.1)	≤0.001
Does your migraine (headache) affects any of your intellectual or physical activities?	37 (46.8)	23 (29.1)	19 (24.1)	0.034

*Chi squaretest

Table2. Factors like migraine diagnosis, duration, medications and associated pain

Title questions	Yes Frequen cy (%age)	No Frequen cy (%age)	I don't remem ber/nev er noticed	P- value*
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Do you or have you ever experienced headache over the past year?	71 (39.5)	8 (39.5)		≤0.001
Is your migraine freshly diagnosed?	17 (21.5)	62 (78.5)		≤0.001
Do you take medication for your migraines/headache?	35 (44.5)	44 (55.7)		0.311
Does your migraine last longer than 4 hours?	67 (84.8)	12 (15.2)		≤0.001
Is your headache associated with pain starting in one side of head?	59 (74.7)	20 (25.3)		≤0.001
Do you experience any throbbing or pulsating feeling in the head?	61 (77.2)	18 (22.8)		<0.001
Have you ever experienced difficulty with light or sunlight when you have headache?	32 (40.5)	47 (59.5)		0.091

*Chi squaretest

Table 3. Factors like temporary blindness and blurring spot

Title	Always Frequen cy (% age)	Someti mes Frequen cy (% age)	Often Frequen cy (% age)	Once Frequen cy (% age)	Freque ncy (% age)	P value *
Do you experience a temporary blindness in one eye when having migraine attack?	2 (2.5)	6 (7.6)	2 (2.5)	6 (7.6)	63 (79.7)	≤0.001
Do you see a blurring spot in the sides of your visual field when having migraine attack?	1 (1.3)	3 (3.8)	2 (2.5)	9 (11.4)	64 (81)	≤0.001

*Chi squaretest

DISCUSSION

Migraines, being an intricate neurological illness, manifest a multitude of symptoms and experiences that have a substantial influence on the lives of individuals affected by them. The correlation analysis conducted in this study has shown fascinating connections among several parameters associated with migraines. Gaining insight into these associations was essential for both medical practitioners and persons managing migraines, as it may guide treatment approaches, improve diagnostic accuracy, and contribute to a more thorough understanding of the disorder. This study showed the compiled relationship of migraine with aura to many different visually associated signs and conditions while in other studies only one or two visually associated conditions with migraine were targeted.

An important finding of the study was the direct relationship between the length of headaches lasting more than 4 hours¹¹ and many related symptoms. It indicated that migraines lasting for a longer period of time may display unique features or elicit extra symptoms. The association between pulsating feelings,¹² unilateral head pain¹³ and the efficacy of medicine prompts inquiries regarding the possible impact of length on the intensity of symptoms and the responsiveness to therapy.¹⁴

The observed positive association between the occurrence of headaches over the last year and the clinical diagnosis of migraines is a fascinating finding. This association suggests that prolonged headache episodes may act as an indication or precursor to clinically severe migraines. Additional investigation might examine the transition from common headaches to medically diagnosable migraines, offering useful knowledge on the early identification and treatment of migraine conditions.

The investigation uncovered robust positive relationships between the migraines/headaches and several characteristics associated with clinically defined migraines like throbbing pain in the head¹⁵ and unilateral head discomfort. Furthermore, the efficacy of treatment was shown to be associated with symptoms such as nausea or vomiting during headaches and photophobia.¹⁶ These findings emphasize the significance of drugs in the management of migraines.¹⁷ while also emphasizing the necessity for personalized strategies that take into account the variety of symptom profiles.

Visual disruptions seen during migraines, such as auras, sudden bursts of light, and unclear vision¹⁸

consistently showed favorable associations with various parameters. These findings corresponded with the varied visual sensations that are described by those who have migraines. The correlation, between visual symptoms and drug consumption, as well as other characteristics associated to migraines, highlights the complex interplay between neurological and visual components of migraines. It necessitates more research into the underlying processes.

There were favorable associations between sensory characteristics, including sensitivity to light and noise¹⁹ and numerous elements connected to migraines. The correlation between light sensitivity, clinically diagnosed migraines,²⁰ medication consumption and headache frequency indicated that sensory variables are very influential in the development and advancement of migraines. Gaining more profound comprehension of these sensory connections might direct the creation of focused therapies to alleviate symptoms. The study revealed complex connections when examining correlations related to gender.²¹ Gaining more profound comprehension of these sensory connections might direct the creation of focused therapies to alleviate symptoms.

CONCLUSION

This study showed that there was a direct relation between migraine and visual conditions. These conditions were blurring of vision, distorted image viewing, scotomas and even sometimes sudden monocular visual loss.

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Authors' Contributions:

Author A: Conceptualization and design of the study, drafting, review and final approval of the final manuscript

and agrees to be accountable for all aspects of the work.

Author B: Data acquisition, review and approval of the final manuscript and agrees to be accountable for all aspects of the work.

Author C: Data analysis, review and final approval of the final manuscript and agrees to be accountable for all aspects of the work.

Author D: Data interpretation, review and final approval of the final manuscript and agrees to be accountable for all aspects of the work.

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